

Air Force Civil Engineer Center



**FORMER
WILLIAMS AIR FORCE BASE
Site ST012
Former Liquid Fuel
Storage Area**

**BCT Conference Call
20 September 2018**



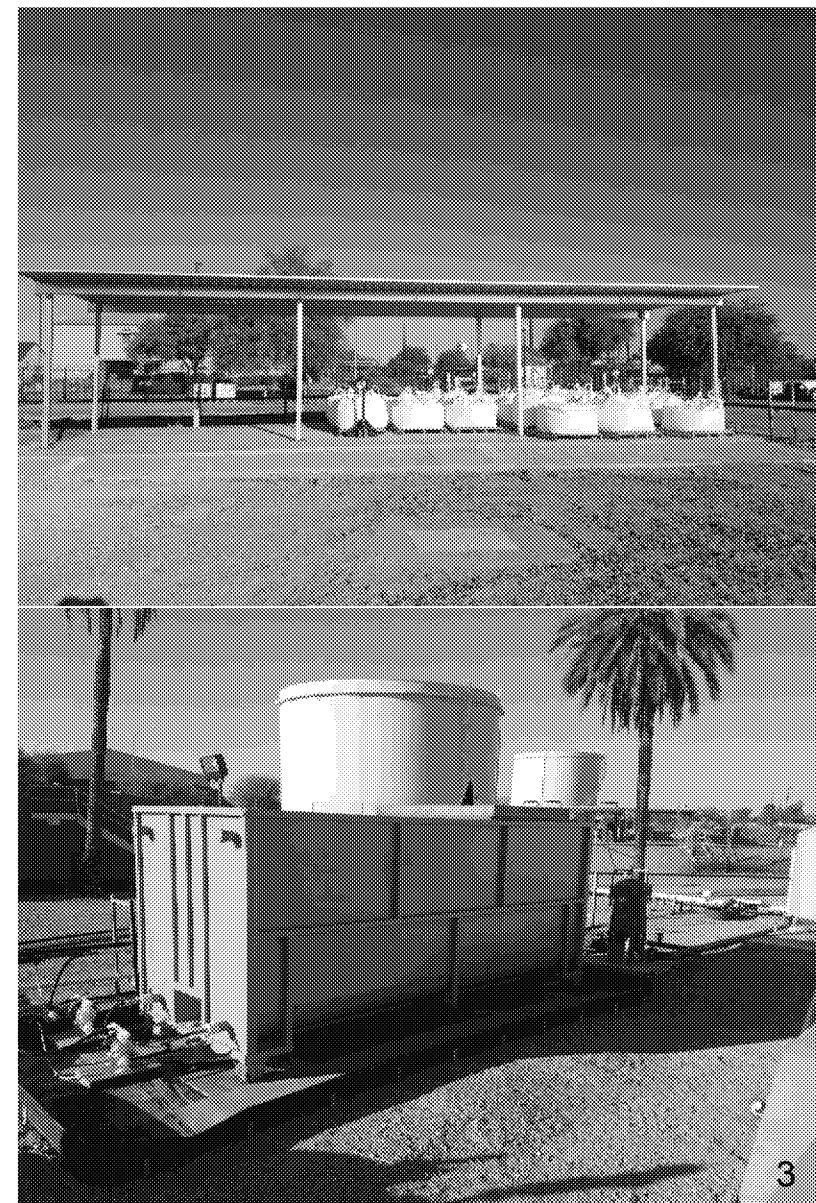
Site ST012 Outline

- Summary of activities since Aug BCT call
- Update on SVE system
- LNAPL monitoring/removal update
- Perimeter well benzene results
- Path forward



Site ST012 Activities Since August

- Continued SVE operation
- Continued LNAPL screening in accessible wells
- Additional iron speciation testing (evaluating results)
- Monthly sampling of CZ23 on 5 Sep (results pending). Previous samples indicate continuing reduction of benzene concentrations
- Operation of Extraction and Treatment
 - Continue work on pumps when failures occur

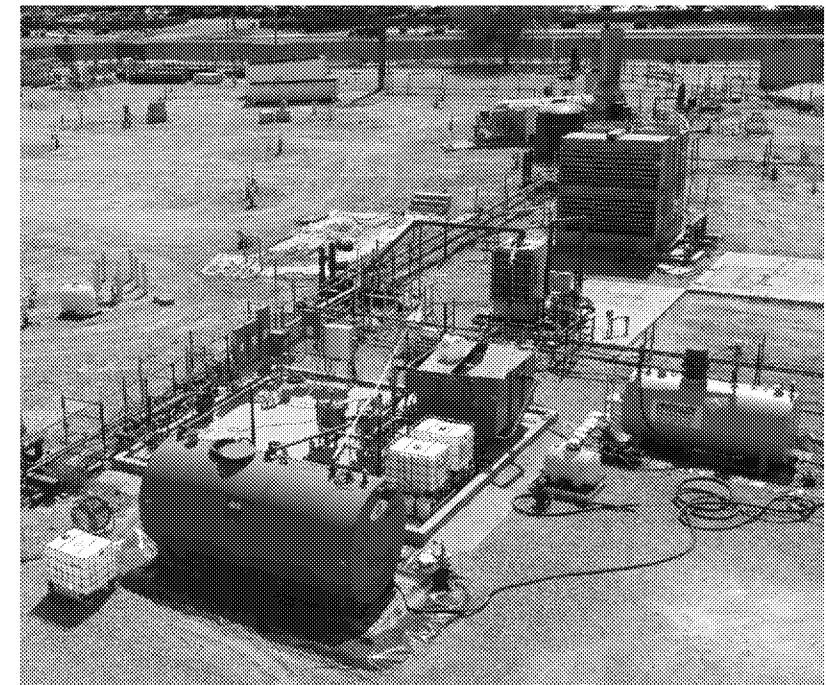




Site ST012 Activities Since August

- **Evaluating Off-Gas Treatment**

- No LNAPL has been recovered since extraction started up
- Benzene air stripper influent concentration has fluctuated but appears to be decreasing
 - 2 May – 310 µg/L
 - 1 Jun – 1,400 µg/L
 - 5 Jul – 76 µg/L
- Off-gas concentrations are low for continued thermal oxidation

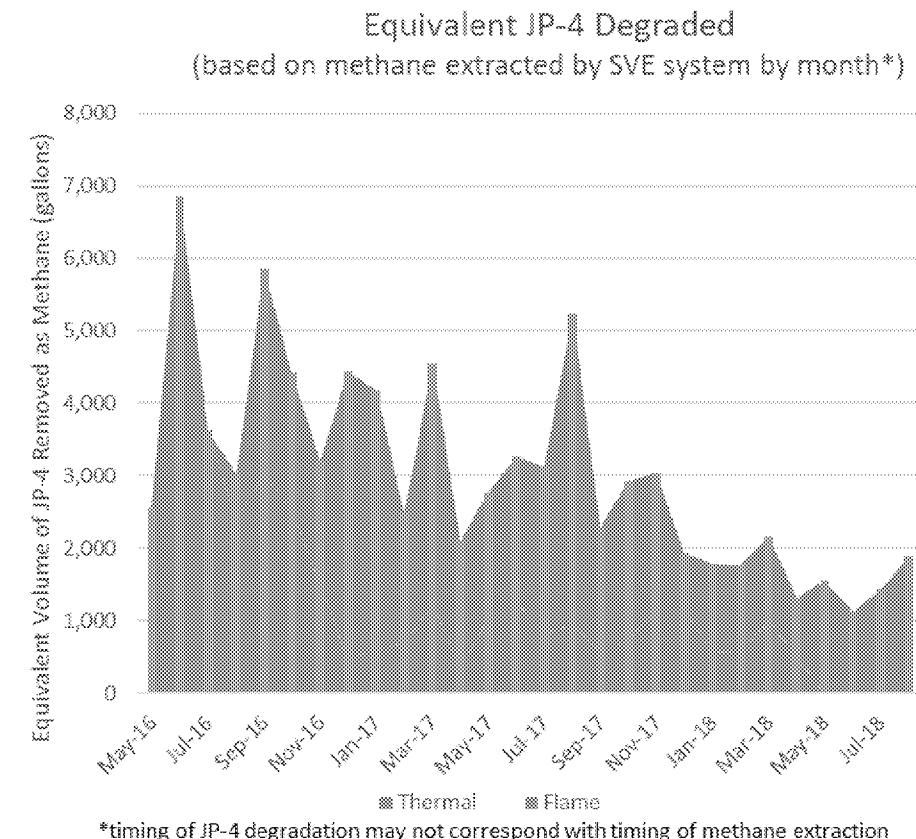
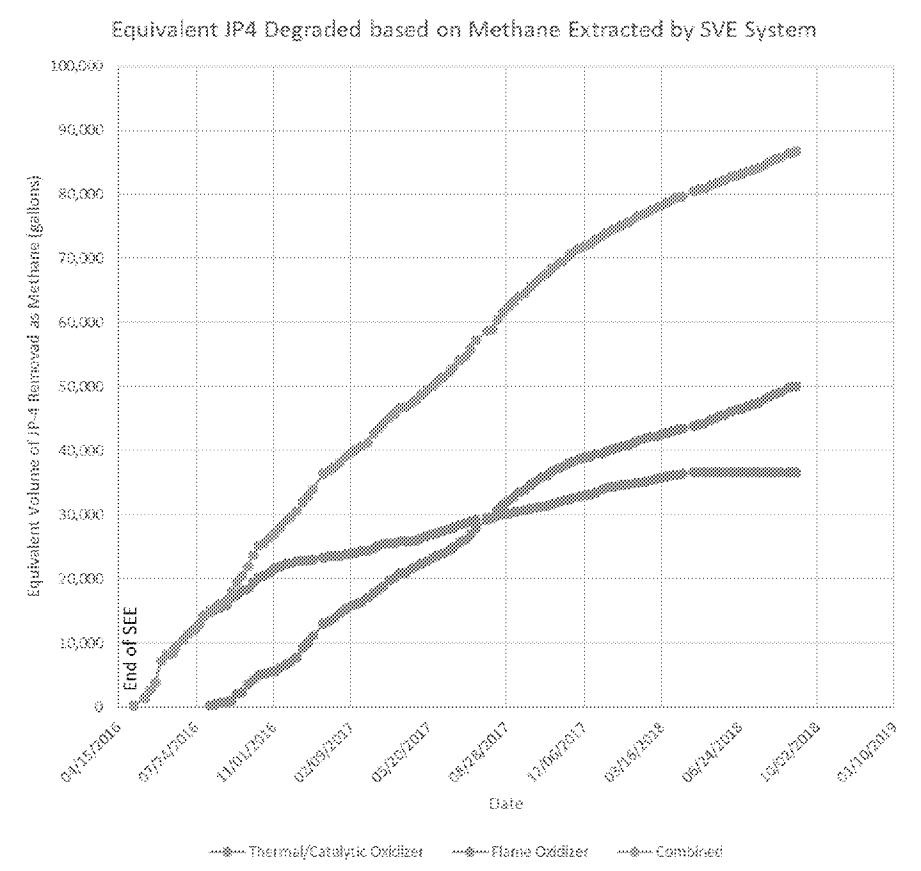




JP-4 Degradation Based on Methane Removed with SVE (through 6 Sep)



Site ST012 SVE System Equivalent JP-4 Degradation Based on Methane Removed

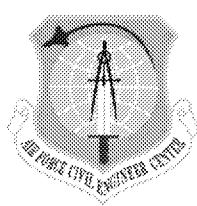


*timing of JP-4 degradation may not correspond with timing of methane extraction

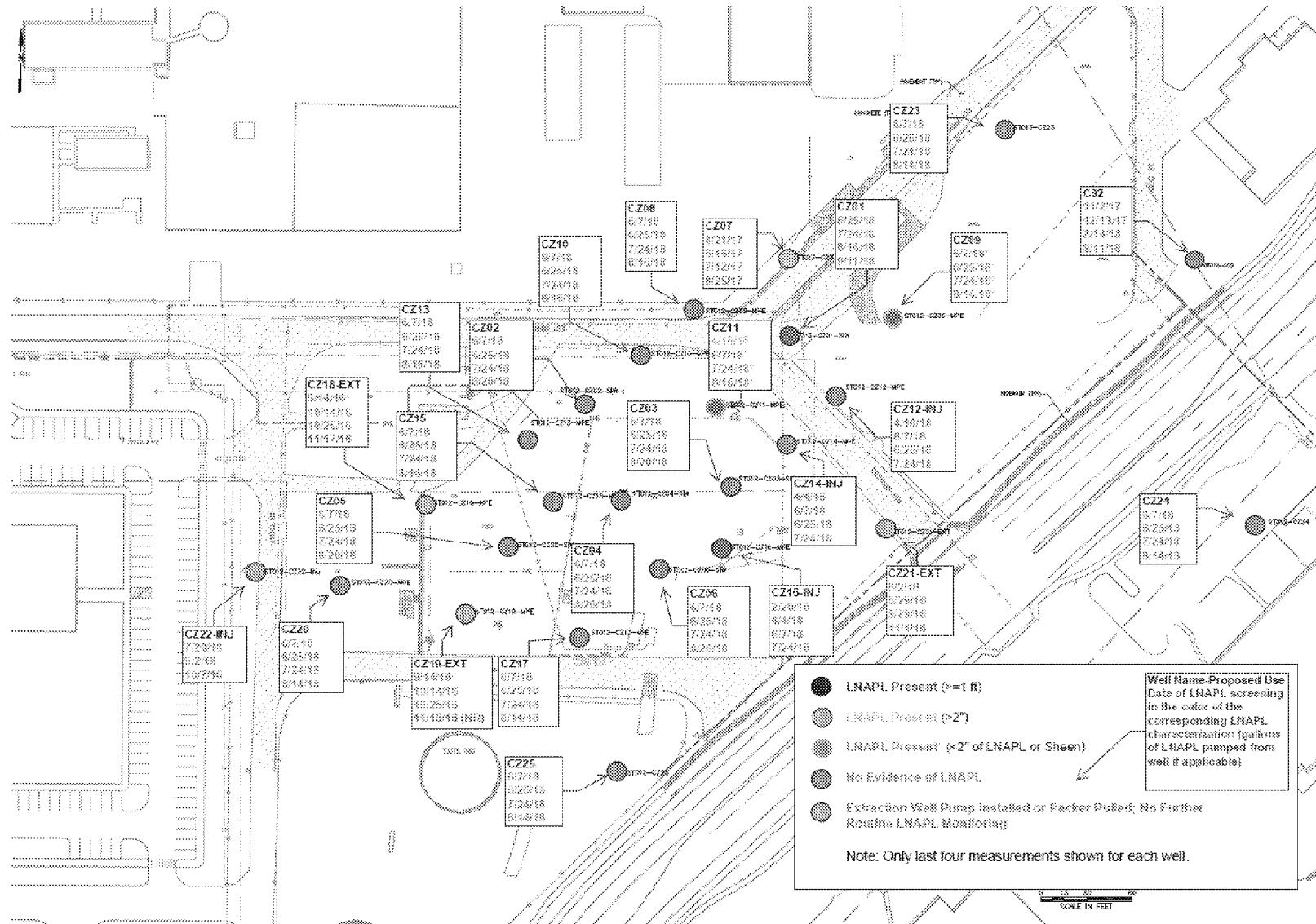
- Estimates through 6 Sep 2018.
- Estimated JP-4 degradation as methane is in addition to JP-4 removal reported for SVE
- Thermal oxidizer changed from SVE to groundwater treatment end of Apr

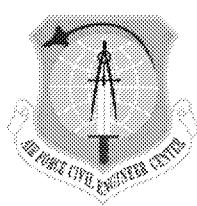


LNAPL Monitoring Update (through 4 Sep)

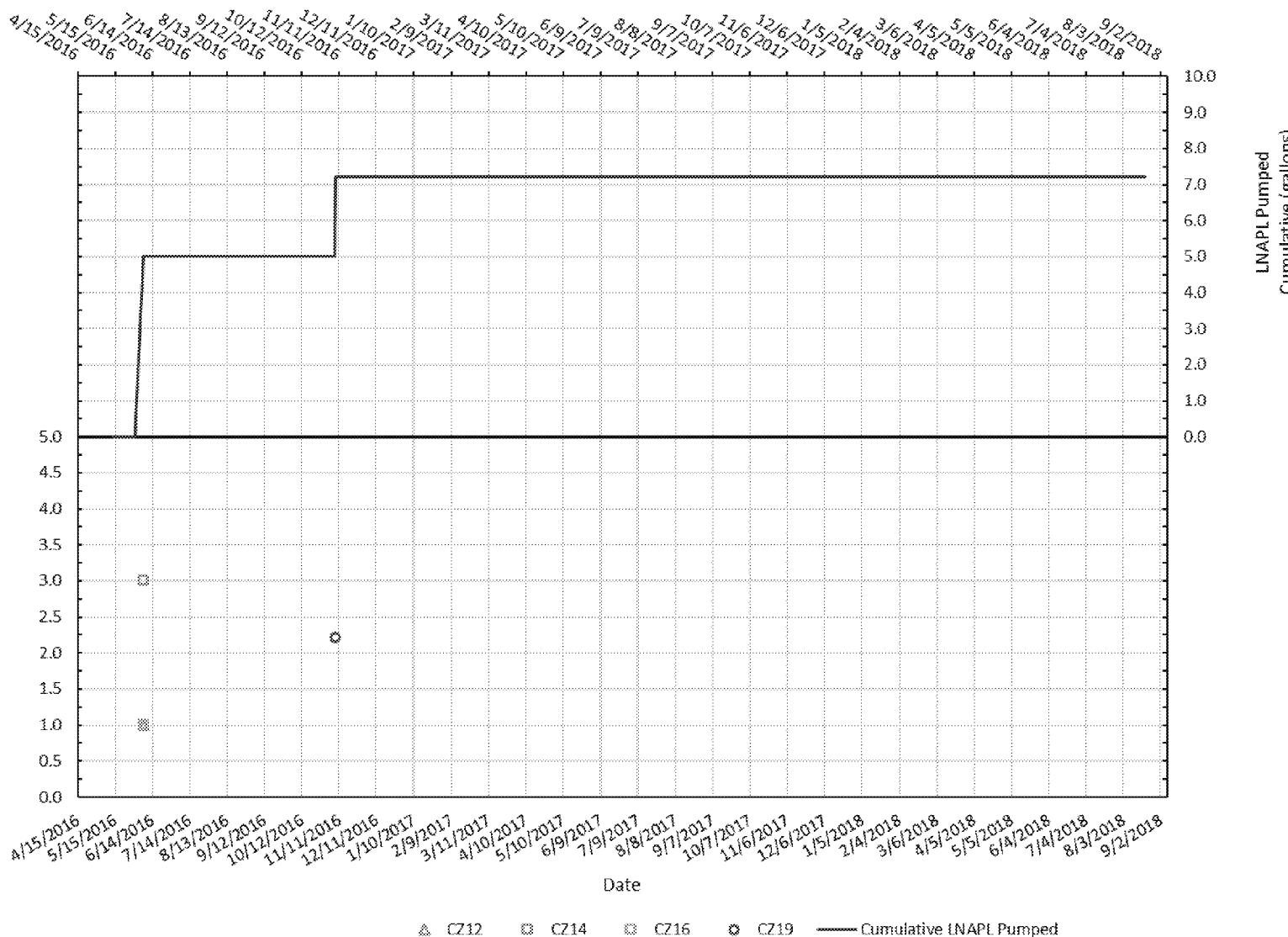


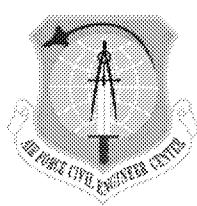
LNAPL Monitoring/Removal Status Cobble Zone



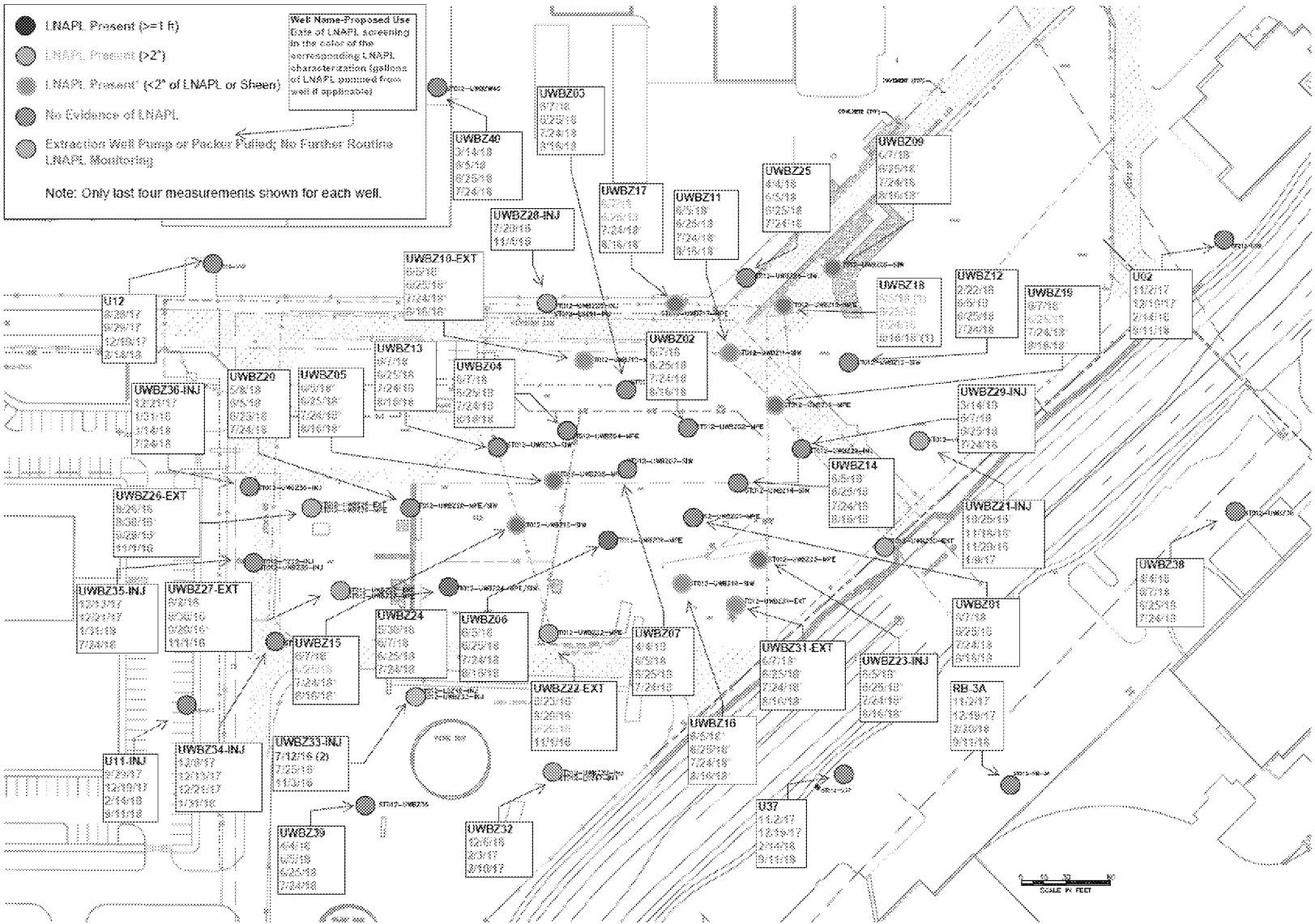


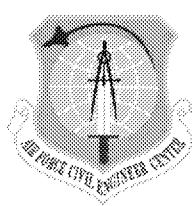
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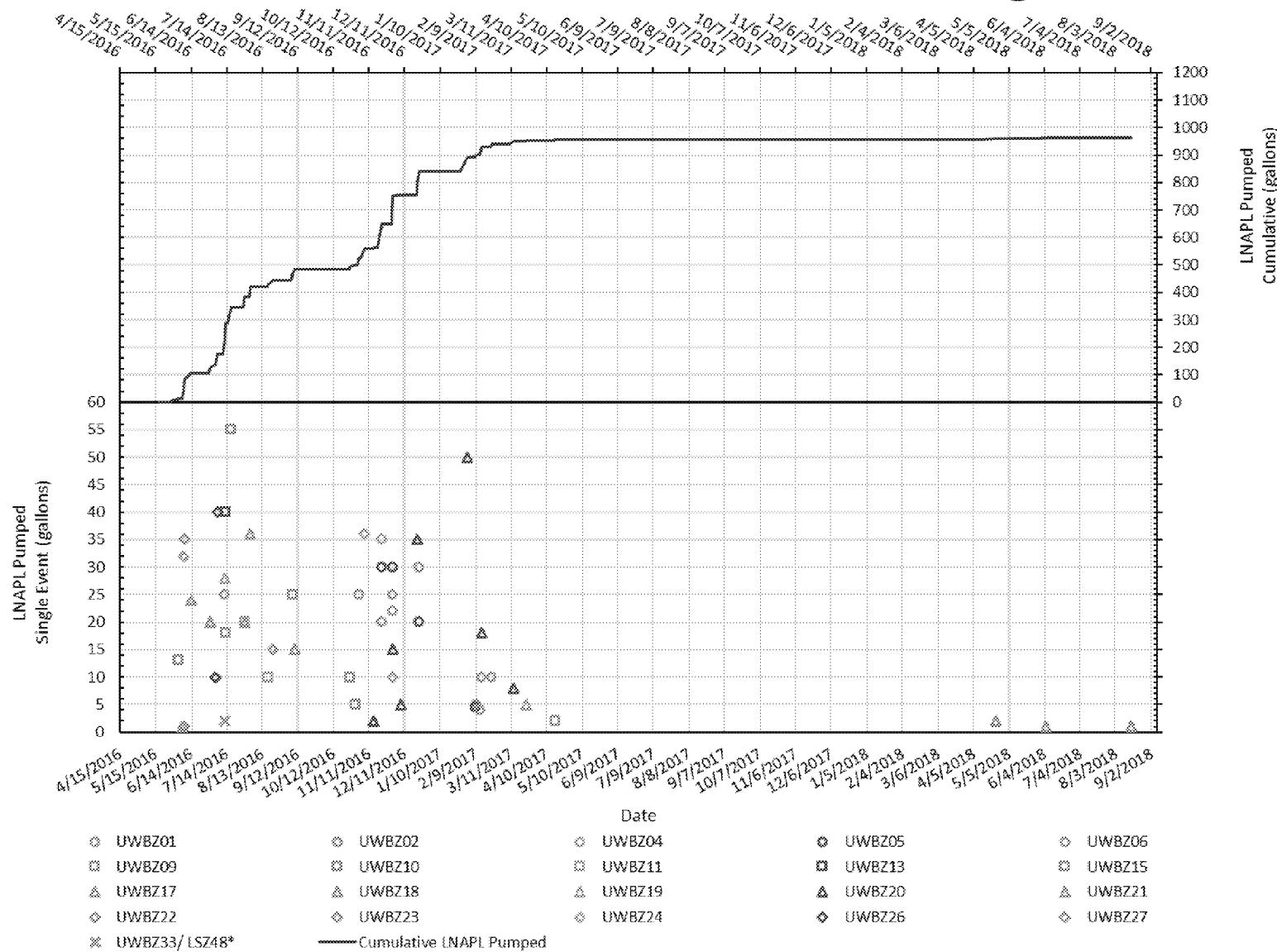


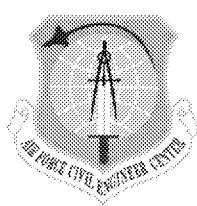
LNAPL Monitoring/Removal Status Upper Water Bearing Zone



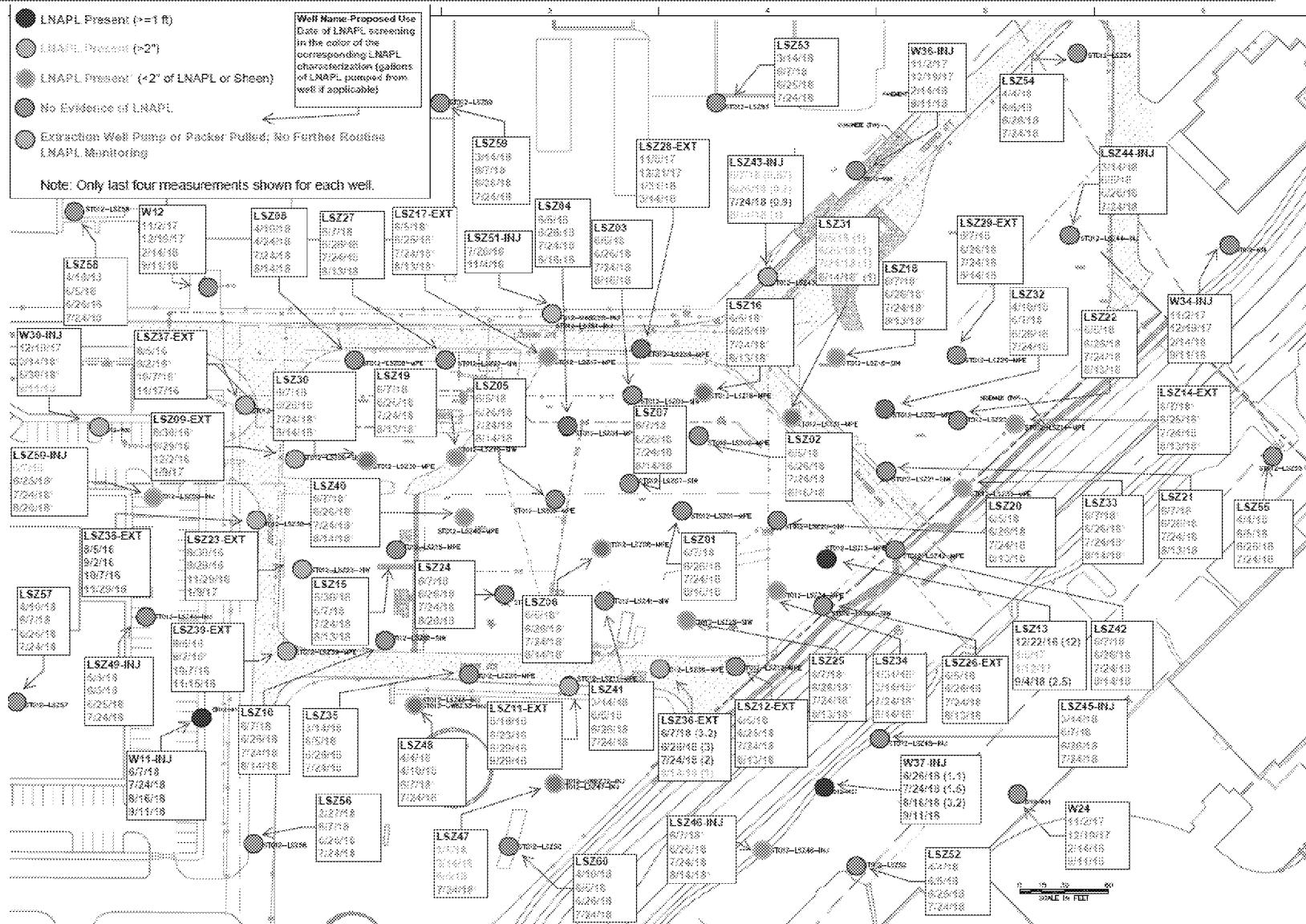


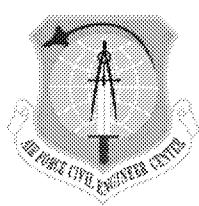
LNAPL Monitoring/Removal Status Upper Water Bearing Zone





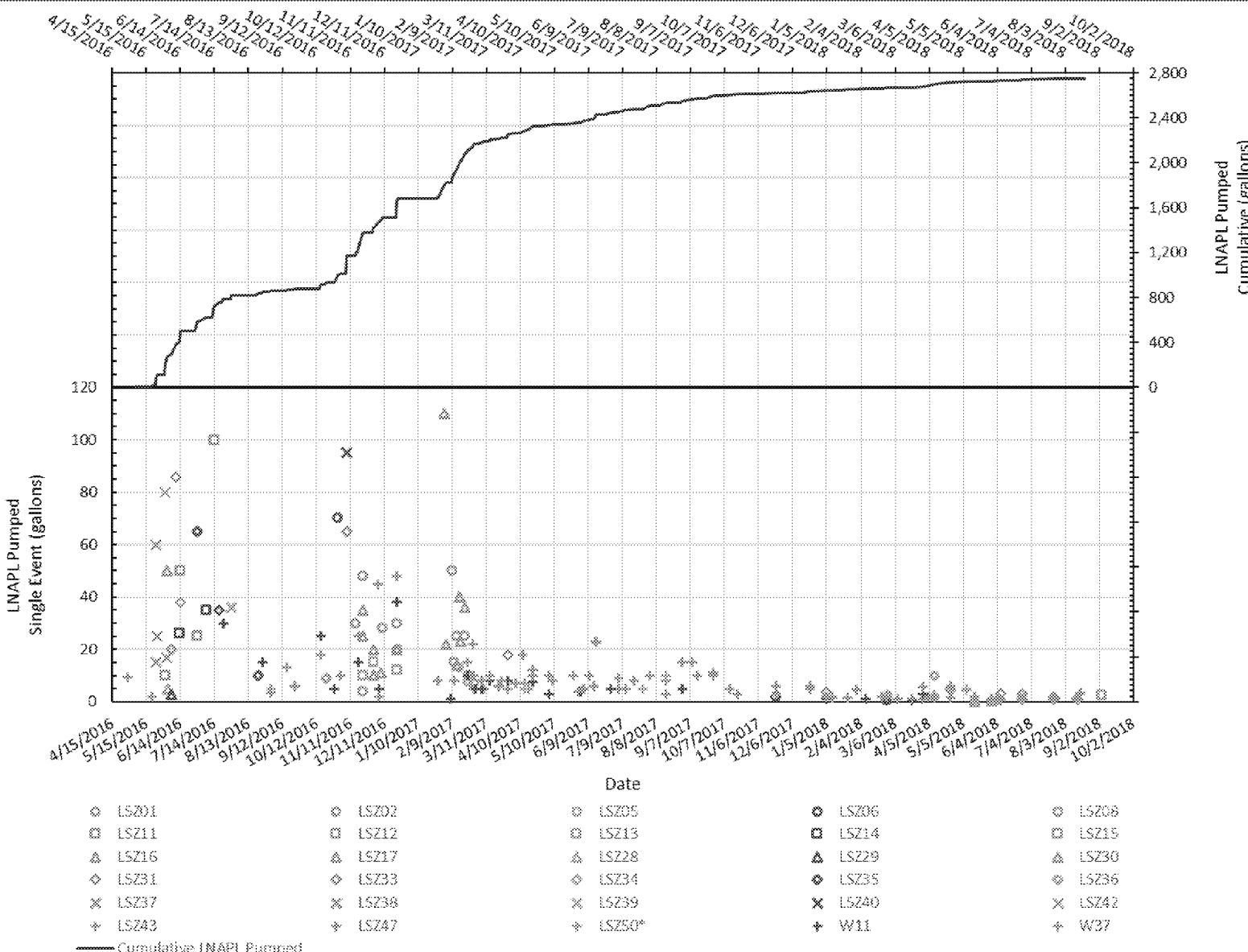
LNAPL Monitoring/Removal Status Lower Saturated Zone





LNAPL Monitoring/Removal Status

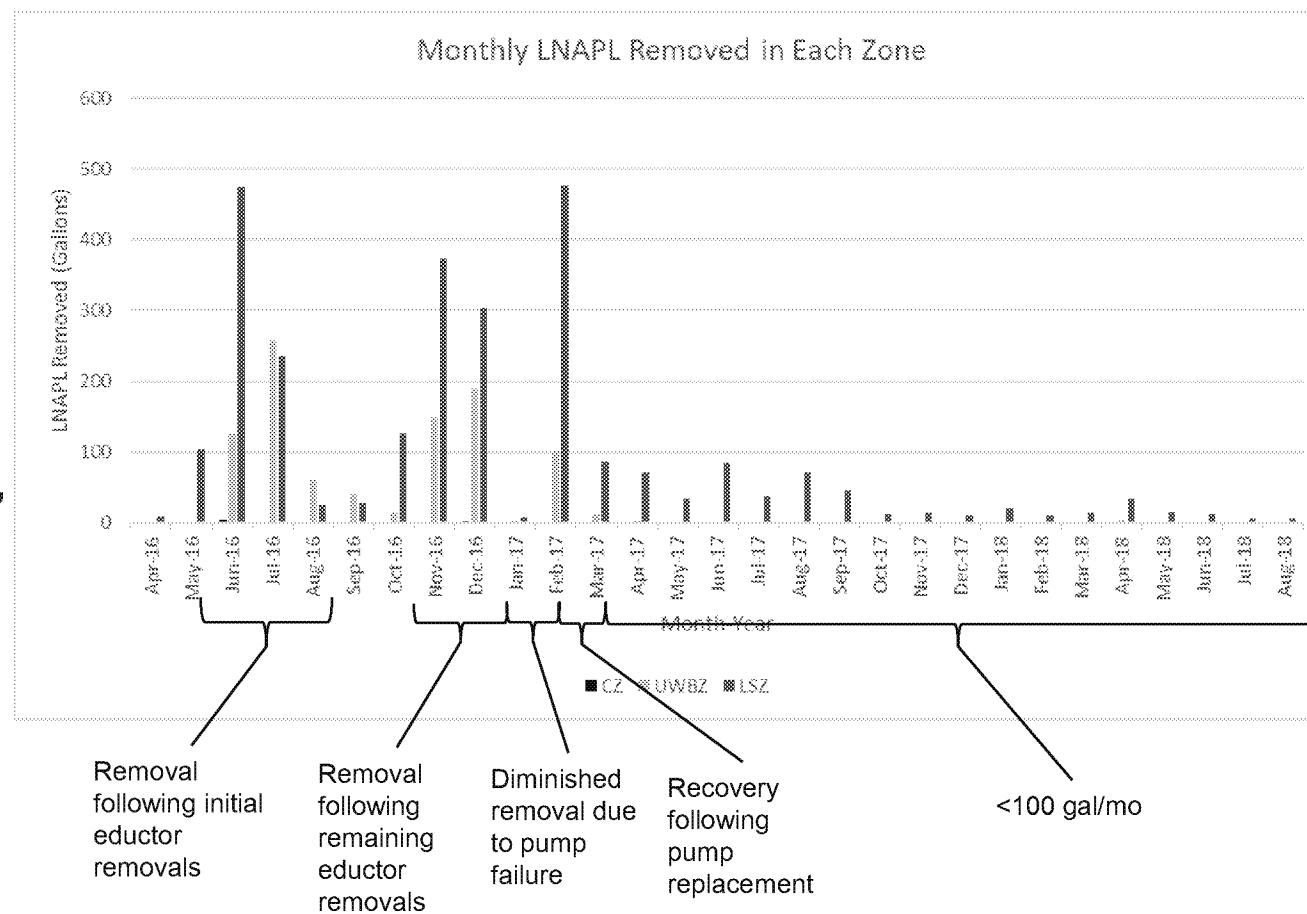
Lower Saturated Zone





ST012 LNAPL Monitoring/Removal Summary

- CZ – 7 gallons of LNAPL removed. None since Nov 2016
- UWBZ - 961 gallons of LNAPL removed. None removed since Aug update
- LSZ - 2,754 gallons of LNAPL removed. 9 gallons removed since Aug update (W37, LSZ13, LSZ31, LSZ36, LSZ43).





Additional Perimeter Samples Collected

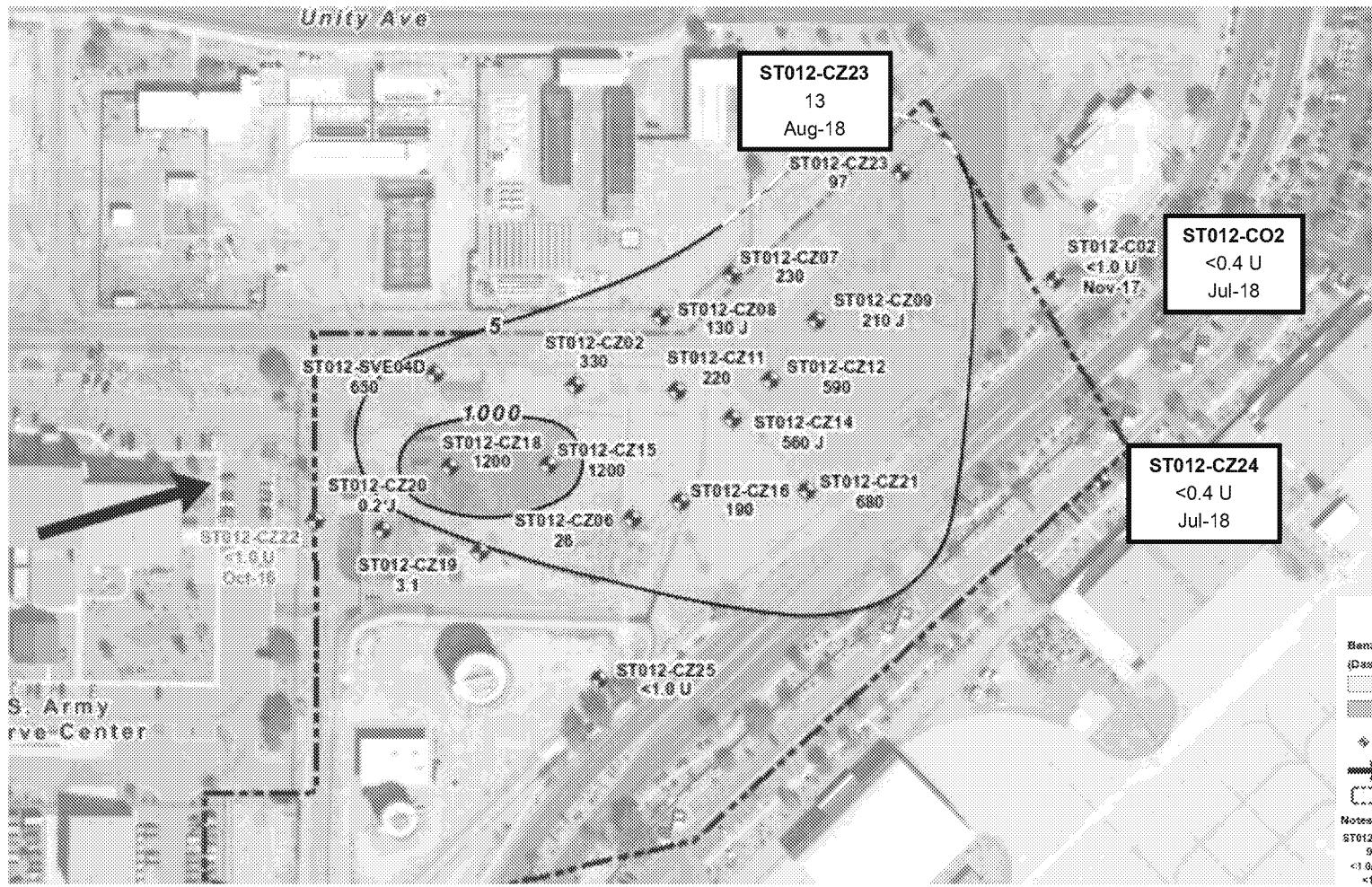


ST012 Late July/Early August Perimeter Sampling

- Sampled perimeter wells that were not part of the re-baseline event in April 2018
- Injections and quarterly sampling for pilot study monitoring have been delayed since June 2018, thus, sampling of downgradient perimeter wells that were part of re-baseline event was performed
- Benzene results on following slides



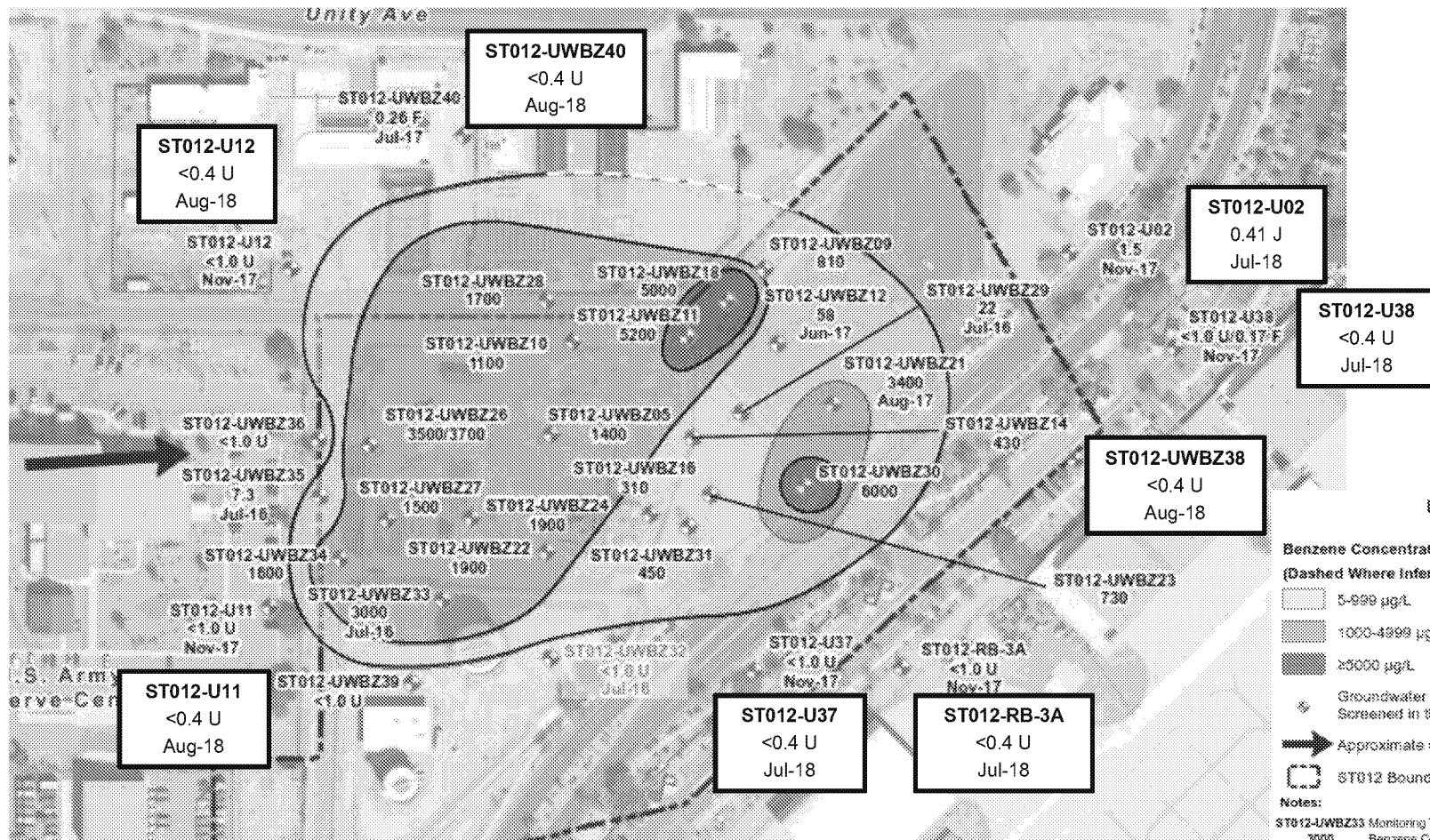
Site ST012 CZ Sampled Locations



*Sample could not be collected from CZ22 due to packer in the well (dual screened well)



Site ST012 UWBZ Sampled Locations



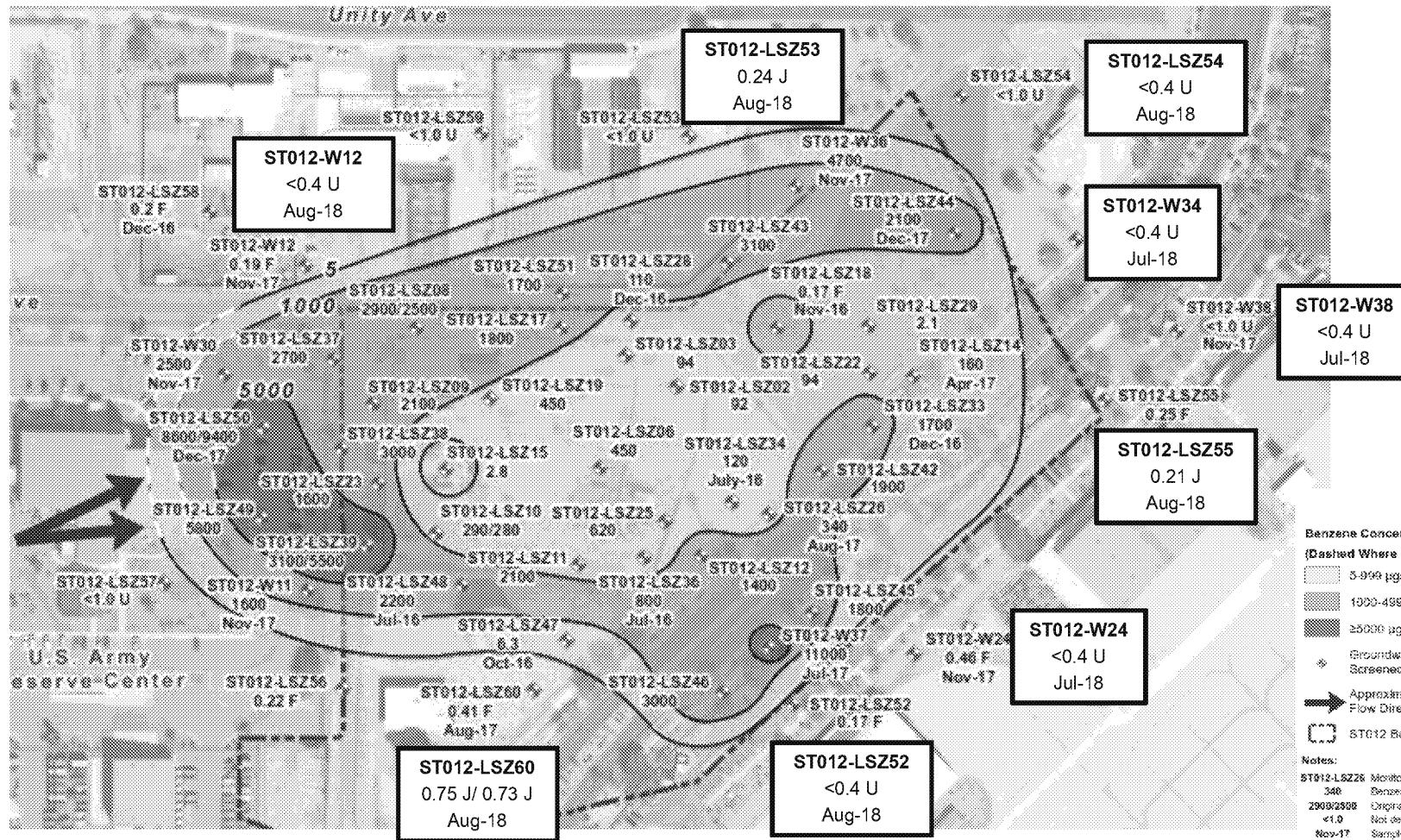
*Sample could not be collected from UWBZ32 due to packer in the well (dual screened well)

Legend

Benzene Concentrations (µg/L) in Groundwater (Dashed Where Inferred)	
5-999 µg/L	
1000-4999 µg/L	
≥50000 µg/L	
Groundwater Monitoring Well Location Screened in the UWBZ	
●	Approximate Groundwater Flow Direction
□	ST012 Boundary
Notes:	
ST012-UWBZ33 Monitoring Well Identification:	
3000	Benzene Concentration (µg/L)
3500	Original/indicative results
<1.0	Not detected at or above the RL
Nov-17	Sample Date
NOA	(Apr-18 re-baseline event if not listed)
RL	Microgram per liter
U	Reporting Limit
UWBZ	Upper Water Bearing Zone



Site ST012 LSZ Sampled Locations





Site ST012 Activities Sep-Oct

- Continued SVE operation
- Continued monthly CZ23 sampling
- Pilot Study Implementation
 - Pending resolution of containment/characterization discussions